



Leal-Filho, W, Nagy, GJ and Ayal, DY (2020) Viewpoint: climate change, health and pandemics – a wake-up call from COVID-19. *International Journal of Climate Change and Strategies Management*, 12 (4). pp. 533-535. ISSN 1756-8692

Downloaded from: <https://e-space.mmu.ac.uk/626871/>

Version: Accepted Version

Publisher: Emerald

DOI: <https://doi.org/10.1108/IJCCSM-08-2020-212>

Please cite the published version

<https://e-space.mmu.ac.uk>

Viewpoint: Climate Change, Health and Pandemics- a Wake-Up Call from COVID-19

International Journal of Climate Change Strategies and Management **12**(4):533-535
17 Aug 2020 [DOI](https://www.emerald.com/insight/content/doi/10.1108/IJCCSM-08-2020-212/full/html) <https://www.emerald.com/insight/content/doi/10.1108/IJCCSM-08-2020-212/full/html>

Walter Leal Filho ¹, Gustavo J. Nagy², Desalegn Y. Ayal³

¹ Research and Transfer Centre „Sustainable Development and Climate Change Management",
Hamburg University of Applied Sciences, Ulmenliet 20, D-21033 Hamburg, Germany
E-mail: walter.leal2@haw-hamburg.de

² Instituto de Ecología y Ciencias Ambientales, Facultad de Ciencias, Universidad de la República,
Montevideo, Uruguay. Email: gnagy@fcein.edu.uy

³ Center for Food Security Studies, College of Development Studies, Addis Ababa University, Addis
Ababa, Ethiopia. Email: desalula@gmail.com

Climate change is a global crisis that is driven mainly by natural events and human-induced global warming. The latter often occurs through the excessive burning of fossil fuels and methane production via agricultural practices (Kinney, 2018). Climate change has contributed to increased global temperatures, erratic weather patterns and a rise in disasters. These events have severe impacts on the health of humans (Lou et al., 2019).

The direct health impacts of climate change are seen through heat waves, droughts, floods, rise in sea levels, increased pollution and extreme weather events (Kim et al., 2014), among others. The increased frequencies of extreme events and high temperatures are associated with higher mortality and morbidity rates (Matthews et al., 2017). Heat strain, for instance, has been associated with several clinical risks and health impairments. The external temperature can influence and increase the internal body temperature, thus promoting the risk of diseases, infections and general illness (Kjellstrom et al., 2016).

Furthermore, heat stress has been causing a decline in crop production, reducing food supplies and promoting malnutrition (Deryng et al., 2014). This is

mainly seen through periods of droughts and low rainfall. Furthermore, droughts decrease the water availability, thus promoting dehydration (Sena et al., 2018). The opposite of the scale, i.e. during intensive rain periods, extreme flooding may destroy crops and damage households (Zhang et al., 2016). Floods may also promote the spread of water-borne diseases, further compromising the health of affected individuals (Ashbolt, 2019). Furthermore, we experience an increase in the numbers of a variety of insects carrying vector-borne diseases, especially during flooding, and high temperature periods (Franklinos et al., 2019).

Additionally, increased rainfall causes increased surface run-off, which may promote water contamination (Corada-Fernández et al., 2017). This is particularly dangerous in developing countries where freshwater supplies are limited. The consumption of contaminated water may lead to various health impairments and possibly death (Erickson et al., 2019).

Climate change has also been contributing to erratic wind patterns, which often result in the wide dispersion of air pollutants (Ortu et al., 2017). These air pollutants are responsible for various respiratory and autoimmune diseases (Zhao et al., 2019). Furthermore, the spread of harmful air allergens is promoted, increasing the health risk to humans (Shi, 2018).

The links between climate change and pandemics: an example from COVID-19

The world is currently facing an unprecedented crisis, due to COVID-19. Indeed, the COVID-19 crises can be seen as a parallel to the climate crisis, even though the latter has been seen over the past few decades.

Both climate change and the COVID-19 pandemic are global crises of the current human epoch, named "the Anthropocene". Some links between them are as follows:

- a) climate change may facilitate the outbreak of new diseases -including pandemics- through ecosystem changes. Habitat destruction may mean that humans will live in closer proximity to wildlife, while rising temperatures can increase the range of mosquitoes, ticks and other insects known to transmit diseases; as the climate changes, this could become a more common trend (CBC/Radio Canada, 2020);

- b) some denialism of the climate change crisis was also seen in the COVID-19 pandemic. Indeed, some countries where government leaders denied the COVID-19 pandemic have become among the most infected ones, which is in line with the more widespread climate change scepticism in the Anglo-American countries and in respect of conservative behaviour (Björnberg et al., 2017; Leal Filho et al., 2019).
- c) The climate crisis is not treated with the same sense of urgency as the COVID-19 pandemic. Dudman (2020) states a difference in how both crises are perceived and the perennial dilemma of communicating uncertainty. *“Temporally, the constant talk of deadlines, tipping points and policy targets, and the time lag from emissions to impacts all fatally affix climate change as a problem for the future. Not so with COVID-19, which collapsed space and time, and overnight turned the world just beyond our windows into a hostile and dangerous place”* (Dudman 2020).

It is likely that after COVID-19 pandemic, the urgent need for changes in economic models and lifestyles to reduce the impacts of climate change as the parallel global crises, will become clearer. For instance: a more responsible consumption of resources, less greenhouse emitting transportation, and more investments in infra-structure and restoration of ecosystems, to reduce exposure of people and settlements to extreme weather events, and increase their resilience. Also, the frequency and intensity of movements led by the youth, such as "Fridays for Future" will very likely increase as a consequence of the COVID-19 pandemic, since they show that a mobilization by the public is needed.

Conclusions

Climate change and COVID-19 are two crisis which partly reinforce each other. The reciprocal impacts of climate change and COVID-19 on human health are not yet well understood. But even though their urgency and scales are not uniform, these two global crises are causing a remarkable impact on human health and on livelihoods. The impacts of COVID-19 and actions to cope with it are fast, since it is perceived as a deadly pandemic by the global community. Contrastingly, the impacts of climate change are felt slowly, but its residual effects may be staying longer, with the adverse impacts to all aspects of human life, particularly (but not only) on health.

The excessive emissions of greenhouse gases, combined with ecosystems depletion and unleashing of vectors of diseases unknown to date, can help to turn the world into a hostile and dangerous place.

The main lesson from the COVID-19 pandemic is that denialism could cost human lives, and lead to widespread interrelated systems failures, which may not only affect the health sector, but the financial one, and undermine social cohesion. Hence, there is a perceived need for concerted actions to address and possibly reverse the impacts of climate change and of the COVID-19 pandemic. This needs to be done sooner, rather than later, so as to avoid the losses of life both crisis bring about.

References

- Ashbolt, N. J. (2019), Flood and Infectious Disease Risk Assessment *Health in Ecological Perspectives in the Anthropocene* (pp. 145-159): Springer.
- Björnberg, K.E., Karlsson, M., Gilek, M., Hansson, S.E. (2017), Climate and environmental science denial: A review of the scientific literature published in 1990–2015. *J. Clean. Prod.*, 167, 229–241.
- CBC/Radio Canada (2020), How climate change could make outbreaks like COVID-19 more common?<https://www.cbc.ca/radio/day6/pipeline-protests-covid-19-sonic-the-hedgehog-cheating-astros-suing-juul-coachella-meets-saudi-and-more-1.5463038/how-climate-change-could-make-outbreaks-like-covid-19-more-common-1.5463057>.
- Corada-Fernández, C., Candela, L., Torres-Fuentes, N., Pintado-Herrera, M. G., Paniw, M., and González-Mazo, E. (2017),. Effects of extreme rainfall events on the distribution of selected emerging contaminants in surface and groundwater: The Guadalete River basin (SW, Spain). *Science of the total environment*, 605, 770-783.
- Deryng, D., Conway, D., Ramankutty, N., Price, J., and Warren, R. (2014), Global crop yield response to extreme heat stress under multiple climate change futures. *Environmental Research Letters*, 9(3), 034011.
- Dudman, K. (2020), If you think Covid-19 is a dress rehearsal, you may be at the wrong play. <https://torch.ox.ac.uk/article/if-you-think-covid-19-is-a-dress-rehearsal-you-may-be-at-the-wrong-play>
- Erickson, T. B., Brooks, J., Nilles, E. J., Pham, P. N., and Vinck, P. (2019), Environmental health effects attributed to toxic and infectious agents following hurricanes, cyclones, flash floods and major hydrometeorological events. *Journal of Toxicology and Environmental Health, Part B*, 22(5-6), 157-171.

- Franklinos, L. H., Jones, K. E., Redding, D. W., and Abubakar, I. (2019), The effect of global change on mosquito-borne disease. *The Lancet Infectious Diseases*.
- Kjellstrom, T., Briggs, D., Freyberg, C., Lemke, B., Otto, M., and Hyatt, O. (2016), Heat, human performance, and occupational health: a key issue for the assessment of global climate change impacts. *Annual review of public health*, 37, 97-112.
- Kim, K.-H., Kabir, E., and Ara Jahan, S. (2014), A review of the consequences of global climate change on human health. *Journal of Environmental Science and Health, Part C*, 32(3), 299-318.
- Kinney, P. L. (2018). Interactions of climate change, air pollution, and human health. *Current environmental health reports*, 5(1), 179-186.
- Leal Filho, W., Mifsud, M., Molthan-Hill, P., Nagy, G.J., Veiga Ávila, L., and Lange Salvia, A. (2019), Climate Change Scepticism at Universities: A Global Study. *Sustainability*, 11(10), 2981.
- Lou, J., Wu, Y., Liu, P., Kota, S. H., and Huang, L. (2019), Health effects of climate change through temperature and air pollution. *Current Pollution Reports*, 5(3), 144-158.
- Matthews, T. K., Wilby, R. L., and Murphy, C. (2017), Communicating the deadly consequences of global warming for human heat stress. *Proceedings of the National Academy of Sciences*, 114(15), 3861-3866.
- Orru, H., Ebi, K., and Forsberg, B. (2017), The interplay of climate change and air pollution on health. *Current environmental health reports*, 4(4), 504-513.
- Sena, A., Freitas, C., Souza, P. F., Carneiro, F., Alpino, T., Pedroso, M., . . . , and Barcellos, C. (2018), Drought in the Semiarid Region of Brazil: Exposure, Vulnerabilities and Health Impacts from the Perspectives of Local Actors. *PLoS currents*, 10.
- Shi, Z. (2018), Impact of Climate Change on the Global Environment and Associated Human Health. *Open Access Library Journal*, 5(10), 1.
- Whitmarsh, L. (2011), Scepticism and uncertainty about climate change: Dimensions, determinants and change over time. *Global Environ. Change*, 21, 690–700.
- Zhang, Q., Gu, X., Singh, V. P., Liu, L., and Kong, D. (2016), Flood-induced agricultural loss across China and impacts from climate indices. *Global and Planetary Change*, 139, 31-43.
- Zhao, C.-N., Xu, Z., Wu, G.-C., Mao, Y.-M., Liu, L.-N., Dan, Y.-L., . . . , and Fan, Y.-G. (2019), Emerging role of air pollution in autoimmune diseases. *Autoimmunity reviews*.